

This resource assessment is designed to gather and display information specific to Weber County, Utah. This report will highlight the natural and social resources present in the county, detail specific concerns, and be used to aid in resource planning and target conservation assistance needs. This document is dynamic and will be updated as additional information is available through a multi-agency partnership effort. The general observations and summaries are listed first, followed by the specific resource inventories.

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Introduction

Weber County consists of about 160 square miles. The county has a population of a little over 185,000 which includes the Ogden metropolitan area- the second largest city in the state. This central location provides unparalleled access to the Salt Lake International Airport, Hill Air Force Base, Antelope Island and the Great Salt Lake and other cultural, retail, commercial, entertainment and recreational opportunities within Weber County's 15 cities.

The Weber and Ogden Rivers are located in the county and provide most of the irrigation water used in the area.

Average low winter temperatures: 21.5 degrees; average high summer temperatures: 87 degrees; average precipitation: 16.44 inches.

Equal Opportunity Providers and Employers.



General Land Use Observations

Grass / Pasture / Hay Lands

- Complications related to overgrazing include poor pasture condition, soil compaction and water quality issues.
- Control of noxious and invasive plants is an ever increasing problem.
- The small, part-time farms are less likely to adopt conservation due to cost and low farm income.

Row & Perennial (orchards / vineyards / nurseries) Crops

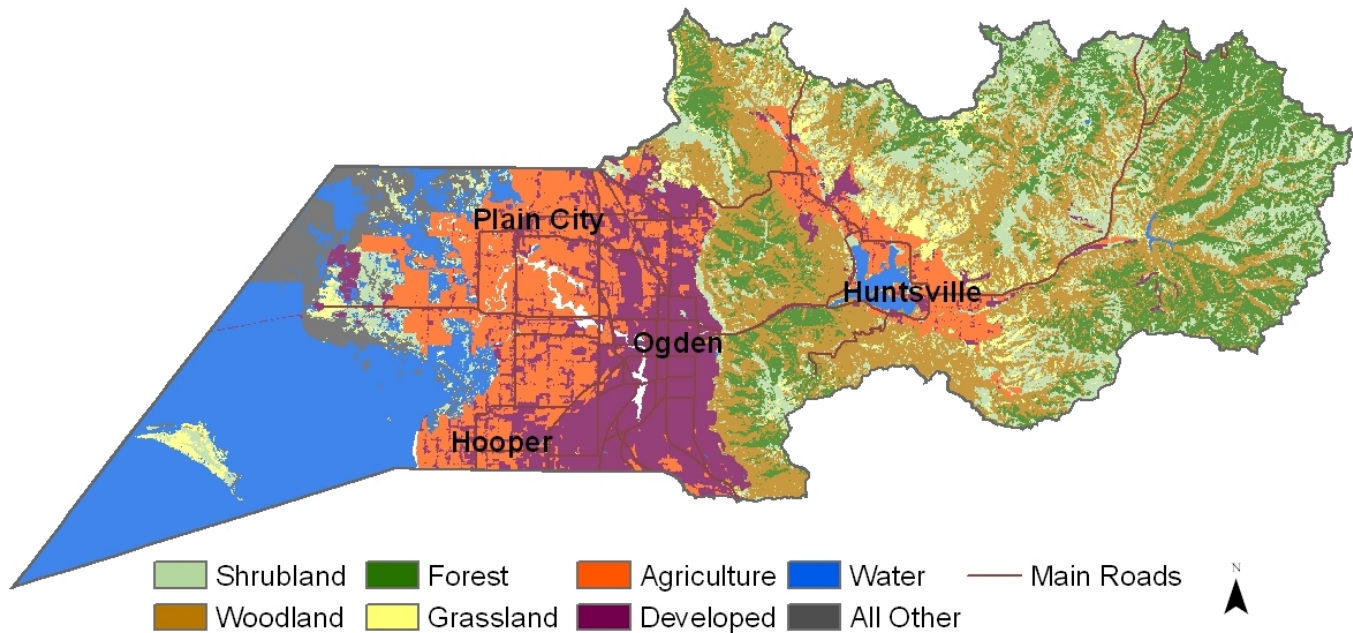
- Residue, nutrient and pest management are needed to control erosion and to protect water quality.
- The small, part-time farms are less likely to adopt conservation due to cost and low farm income.

Resource Assessment Summary

Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Soil	medium	On fine sandy loams when in onions 500ac.
Water Quantity	high	On low water years production is severely reduced.
Water Quality Ground Water	low	Aquifer levels are dropping.
Water Quality Surface Water	high	Any and all contaminated are a concern.
Air Quality	medium	Visibility and particulates during inversions.
Plant Suitability	high	Primarily range and pasture in poor condition. 30,000ac.
Plant Condition	high	Primarily range and pasture in poor condition. 60,000ac.
Fish and Wildlife	high	T&E species and state sensitive species. Game species that provide added income.
Domestic Animals	medium	West Nile Virus. Mad Cow Disease.
Social and Economic	medium	Maintain it as a family farm.

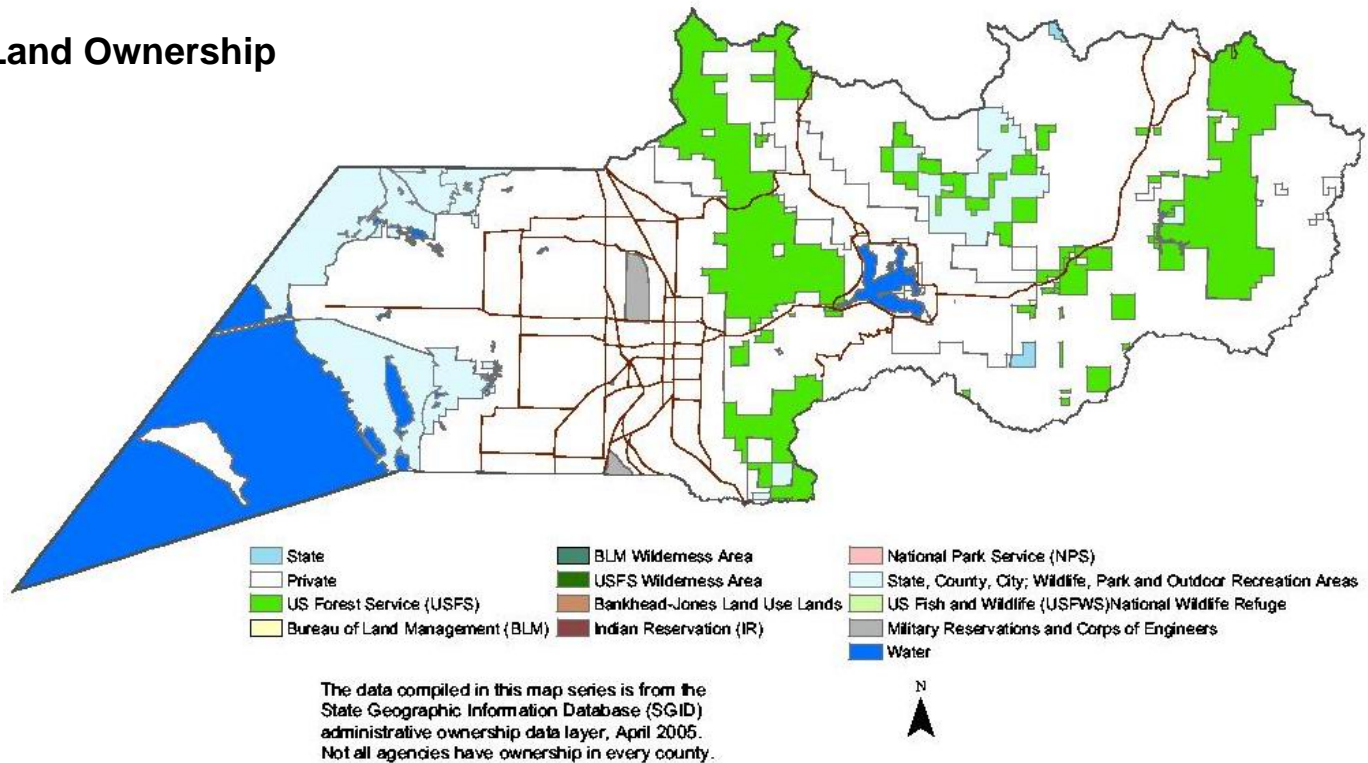
Special Considerations for Weber County:

- Urban growth is rapidly replacing agriculture.

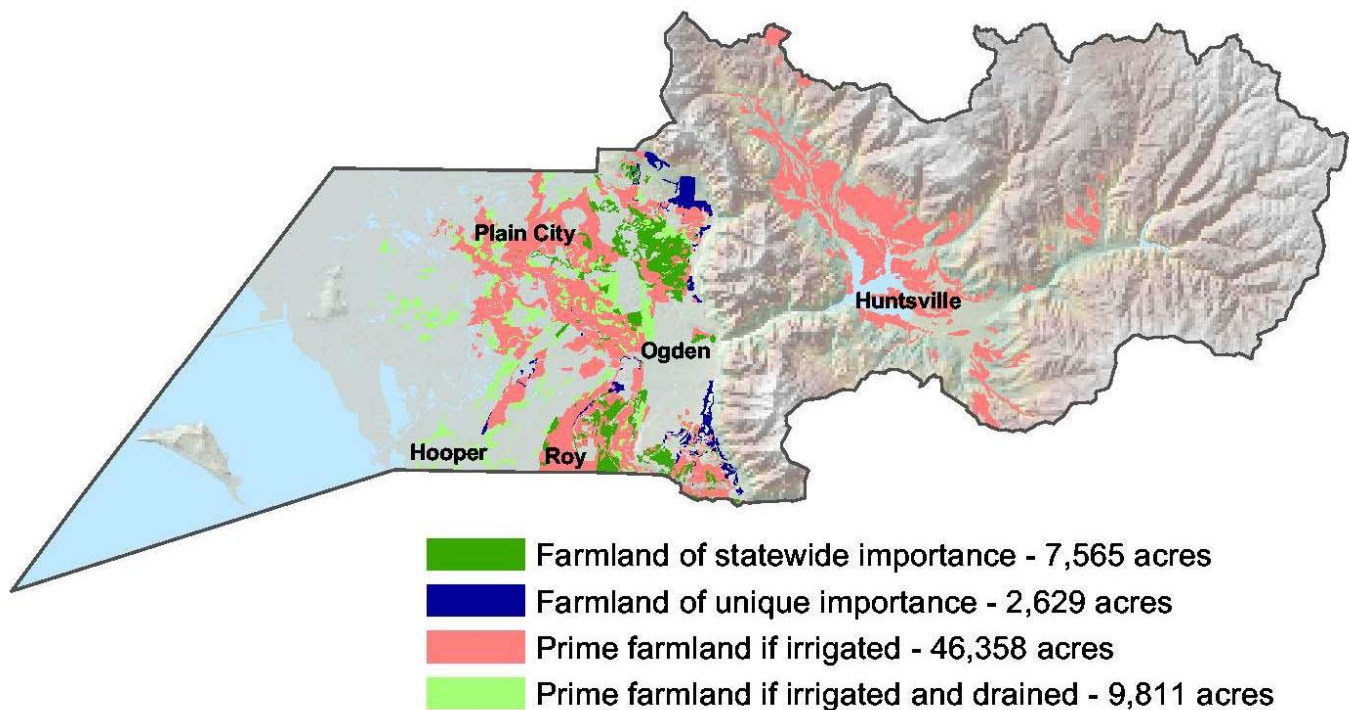
**Land Cover**

Land Cover/Land Use		
	Acres	%
Forest	0.00	0%
Grain Crops	7000.00	2%
Conservation Reserve Program <i>*a</i>	80.00	0%
Grass/Pasture/Haylands	30000.00	7%
Orchards/Vineyards	500.00	0%
Row Crops	3000.00	1%
Shrub/Rangelands	150420.00	37%
Water	59000.00	14%
Wetlands	60000.00	15%
Developed	100000.00	24%
Weber County Totals <i>*b</i>	410000.00	100%
<i>*a</i> : Estimate from Farm Service Agency records and include CRP/CREP. <i>*b</i> : Totals may not add due to rounding and small unknown acreages.		

Land Ownership



Prime & Unique Farm Land



Prime farmland

Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion.

Unique farmland

Land other than prime farmland that is used for the production of specific high-value food and fiber crops...such as, citrus, tree nuts, olives, cranberries, fruits, and vegetables

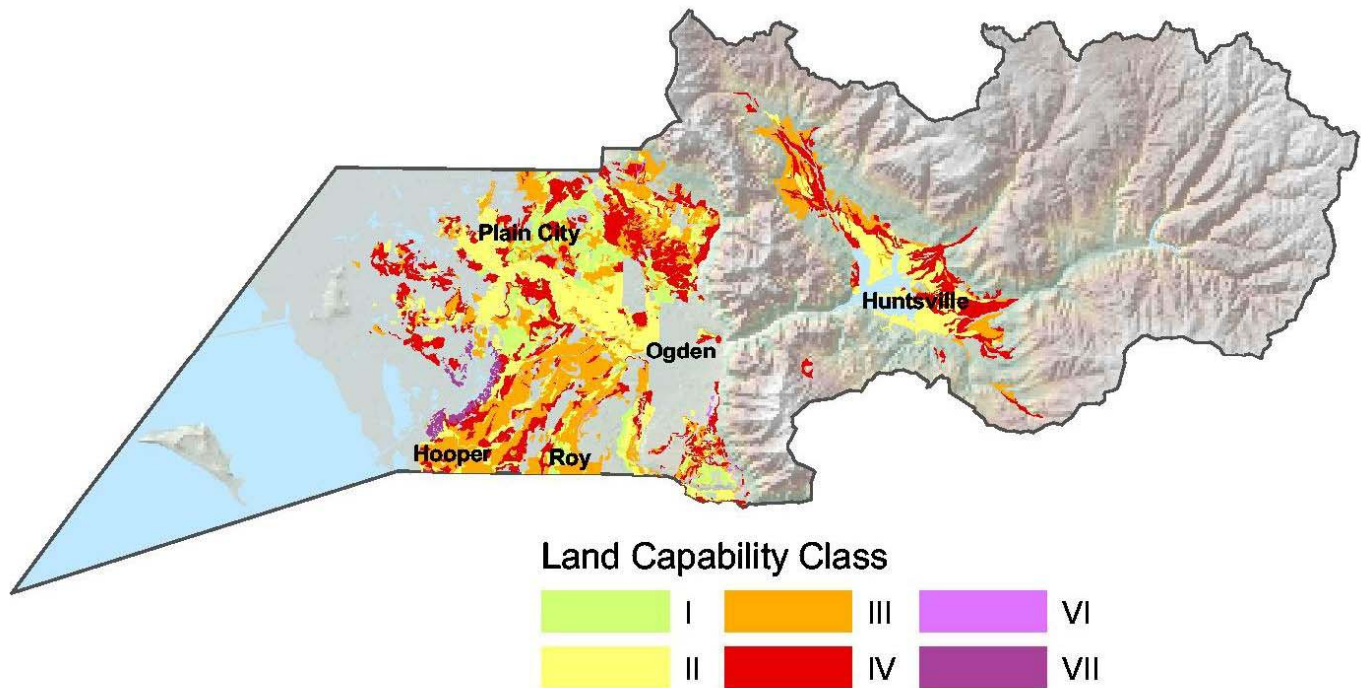
Additional farmland of statewide or local importance

Land identified by state or local agencies for agricultural use, but not of national significance

Resource Concerns – SOILS

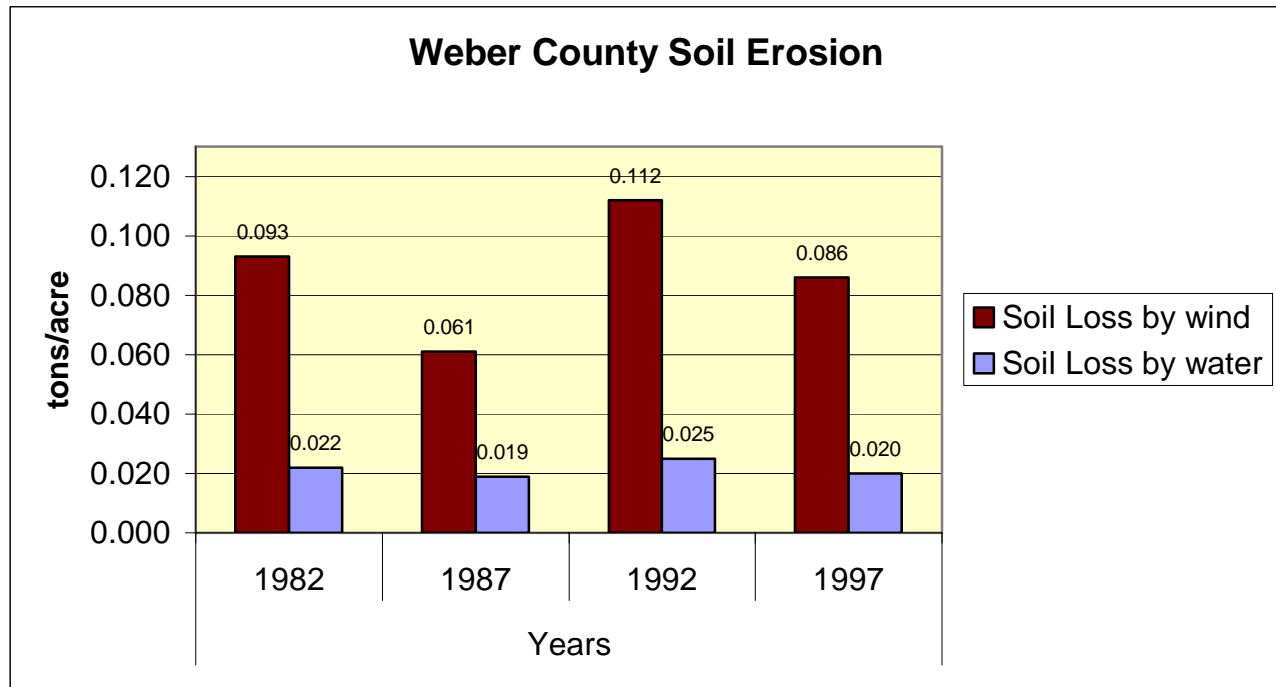
Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Soil Erosion	Sheet and Rill	x			x						x	x				
	Wind	x														
	Ephemeral Gully				x											
	Classic Gully				x											
	Streambank	x	x	x	x	x								x		
	Shoreline															
	Irrigation-induced	x	x													
	Mass Movement				x											
	Road, roadsides and Construction Sites				x											
Soil Condition	Organic Matter Depletion	x			x				x							
	Rangeland Site Stability				x	x		x								
	Compaction	x			x											
	Subsidence															
	ContaminantsSalts and Other Chemicals			x												
	Contaminants: Animal Waste and Other OrganicsN	x									x					
	Contaminants: Animal Waste and Other OrganicsP	x									x					
	Contaminants: Animal Waste and Other OrganicsK	x														
	Contaminants : Commercial FertilizerN	x										x		x		
	Contaminants : Commercial FertilizerP	x												x		
	Contaminants : Commercial FertilizerK	x														
	ContaminantsResidual Pesticides	x														
	Damage from Sediment Deposition													x		

Land Capability Class on Cropland and Pastureland



		Acres	Percentage
Land Capability Class (Irrigated Cropland & Pastureland Only)	I - slight limitations	8,861	11%
	II - moderate limitations	27,143	33%
	III - severe limitations	24,862	30%
	IV - very severe limitations	17,456	21%
	V - no erosion hazard, but other limitations	0	0%
	VI - severe limitations, unsuited for cultivation, limited to pasture, range, forest	181	0%
	VII - very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	4,339	5%
	VIII - misc areas have limitations, limited to recreation, wildlife, and water supply	0	0%

Soil Erosion on Cropland

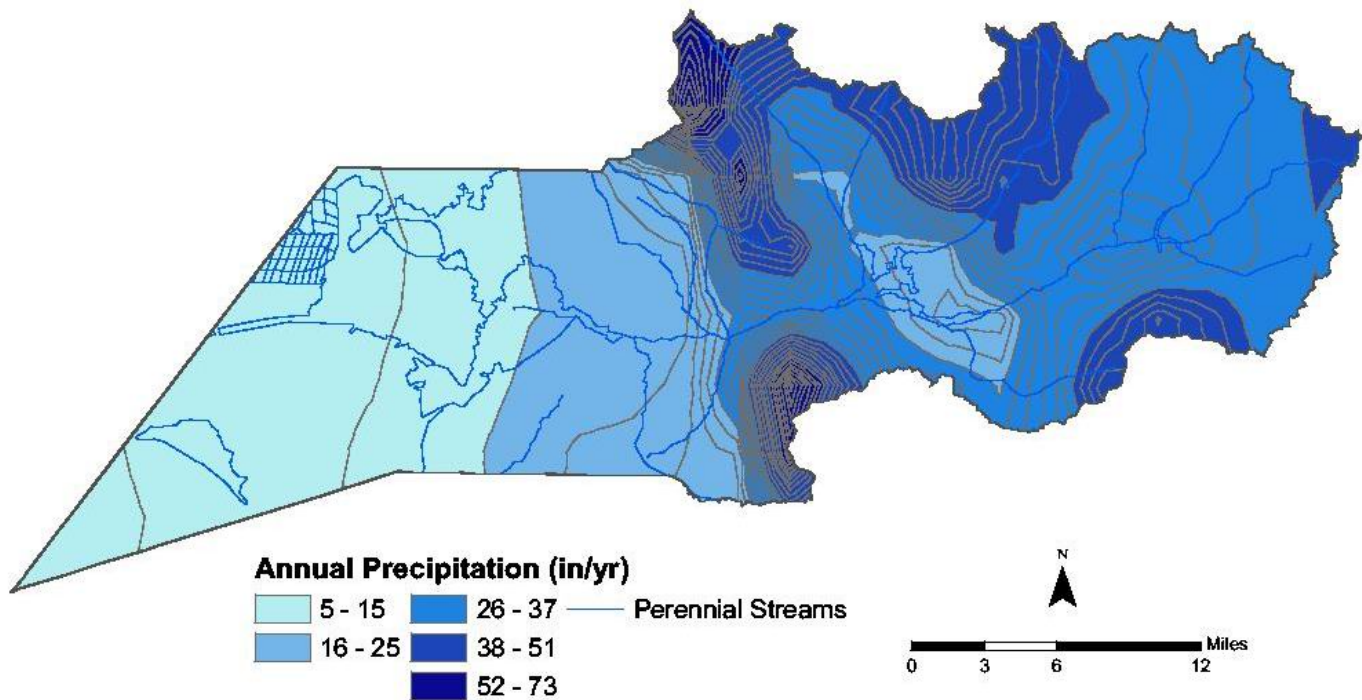


- ❖ The bar graph shown above indicates a large reduction in soil erosion on the total acres in Weber County. However, there is approximately 54,885.2 acres of Highly Erodible Land (HEL) existing in the county. Much of the HEL acres are under a HEL conservation plan. The remaining acres still need treatment.
- ❖ The largest amount of total tons of erosion is from rangeland. Given the 15,000 acres of rangeland in poor condition and assuming two tons per acre per year reduction after treatment, equals 30,000 tons per acre per year reduction.

Resource Concerns – WATER

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Water Quantity	Water Quantity – Rangeland Hydrologic Cycle				X	X			X				X			X
	Excessive Seepage															
	Excessive Runoff, Flooding, or Ponding				X	X			X				X			X
	Excessive Subsurface Water															
	Drifted Snow															
	Inadequate Outlets															
	Inefficient Water Use on Irrigated Land	X	X	X												
	Inefficient Water Use on Non-irrigated Land				X	X			X				X			X
	Reduced Capacity of Conveyances by Sediment Deposition															
	Reduced Storage of Water Bodies by Sediment Accumulation													X		
	Aquifer Overdraft															
	Insufficient Flows in Watercourses				X	X		X	X				X	X		X
Water Quality, Groundwater	Harmful Levels of Pesticides in Groundwater															
	Excessive Nutrients and Organics in Groundwater															
	Excessive Salinity in Groundwater															
	Harmful Levels of Heavy Metals in Groundwater															
	Harmful Levels of Pathogens in Groundwater															
	Harmful Levels of Petroleum in Groundwater															
Water Quality, Surface	Harmful Levels of Pesticides in Surface Water															
	Excessive Nutrients and Organics in Surface Water	X	X	X												
	Excessive Suspended Sediment and Turbidity in Surface Water	X	X	X												
	Excessive Salinity in Surface Water															
	Water Quality – Colorado River Excessive Salinity															
	Harmful Levels of Heavy Metals in Surface Water															
	Harmful Temperatures of Surface Water													X		
	Harmful Levels of Pathogens in Surface Water															
	Harmful Levels of Petroleum in Surface Water															

Precipitation and Streams



		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights	Surface	28525.00	
	Well	3100.00	
	Total Irrigated Adjudicated Water Rights	31625.00	0.00
Stream Flow Data	USGS 10141000 Weber River at Plain City, UT	Total Avg. Yield	578 cu.ft/sec
		May-Sept Yield	609 cu.ft/sec
	USGS 10140100 Ogden River at Pineview Res.	Total Avg. Yield	94 cu.ft/sec
		May-Sept Yield	153 cu.ft/sec
		MILES	PERCENT
Stream Data	Total Miles - Major (100K Hydro GIS Layer)	1112.00	n/a
	303d (DEQ Water Quality Limited Streams)	385.00	35%

		Irrigation Efficiency:		
		<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	20%	60%	20%
	Pastureland	40%	55%	5%

Watersheds & Total Maximum Daily Load (TMDL)

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
		Ogden Valley	Partial
DEQ TMDL's		NRCS Comprehensive Nutrient Management Plans	
Name	Status	Number	Status
		15	Planned
		9	Implemented

AFO/CAFO

Animal Feeding Operations (AFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Farms	12	60	0	0	0	20
No. of Animals	1200	1000	0	0	0	500

Potential Confined Animal Feeding Operations (PCAFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Farms	14	8	0	1	0	3
No. of Animals	1400	800	0	50	0	300

Confined Animal Feeding Operations - Utah CAFO Permit					
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Other
No. of Permitted Farms	2	0	0	0	0
No. of Permitted Animals	2500	0	0	0	0

Data for these tables was provided by the Utah Animal Feeding Operation (AFO) Strategy 2000-2002.

Resource Concerns – AIR, PLANTS, ANIMALS

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Air Quality	Particulate matter less than 10 micrometers in diameter (PM 10)															
	Particulate matter less than 2.5 micrometers in diameter (PM 2.5)															
	Excessive Ozone															
	Excessive Greenhouse Gas: CO2 (carbon dioxide)															
	Excessive Greenhouse Gas: N2O (nitrous oxide)															
	Excessive Greenhouse Gas: CH4 (methane)															
	Ammonia (NH3)- <i>from AFO's</i>										X					
	Chemical Drift															
	Objectionable Odors											X				
	Reduced Visibility - <i>winter fog</i>											X				
	Undesirable Air Movement- <i>winter inversions</i>											X				
	Adverse Air Temperature															
Plant Suitability	Plants not adapted or suited			X	X	X		X	X				X			
Plant Condition	Plant Condition – Productivity, Health and Vigor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Threatened or Endangered Plant Species: Plant Species Listed or Proposed for Listing under the Endangered Species Act	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Threatened or Endangered Plant Species: Declining Species, Species of Concern	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Noxious and Invasive Plants	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Forage Quality and Palatability			X	X	X		X	X							
	Plant Condition – Wildfire Hazard			X												
Fish and Wildlife	Inadequate Food	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Inadequate Cover/Shelter	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Inadequate Water	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Inadequate Space	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Habitat Fragmentation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Imbalance Among and Within Populations	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Threatened and Endangered Species: Species Listed or Proposed for Listing under the Endangered Species Act	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Domestic Animals	Inadequate Quantities and Quality of Feed and Forage			X	X	X		X	X							
	Inadequate Shelter			X	X	X		X	X							
	Inadequate Stock Water			X	X	X		X	X							
	Stress and Mortality															

Noxious Weeds

Utah Noxious Weed List

The following weeds are officially designated and published as noxious for the State of Utah, as per the authority vested in the Commissioner of Agriculture under Section 4-17-3, Utah Noxious Weed Act:

- Bermudagrass** (cynodon dactylon)
- Canada thistle (cirsium arvense)
- Diffuse knapweed (centaurea diffusa)
- Dyers woad (isatis tinctoria L)
- Field bindweed (Wild Morning Glory) (convolvulus arvensis)
- Hoary cress (cardaria drabe)
- Johnsongrass (sorghum halepense)
- Leafy spurge (euphorbia esula)
- Medusahead (taeniatherum caput-medusae)
- Musk thistle (carduus mutans)
- Perennial pepperweed (lepidium latifolium)
- Perennial sorghum (sorghum halepense L & sorghum alnum)
- Purple loosestrife (lythrum salicaria L.)
- Quackgrass (agropyron repens)
- Russian knapweed (centaurea repens)
- Scotch thistle (onopordum acanthium)
- Spotted knapweed (centaurea maculosa)
- Squarrose knapweed (centaurea squarrosa)
- Yellow starthistle (centaurea solstitialis)

Additional noxious weeds declared by Weber County (2003): Puncturevine

Wildlife

The Utah Comprehensive Wildlife Conservation Strategy (CWCS) prioritizes native animal species according to conservation need. At-risk and declining species in need of conservation were identified by examining species biology and life history, populations, distribution, and threats. The following table lists species of greatest conservation concern in the county.

AT-RISK SPECIES				
	Common Name	Group	Primary Habitat	Secondary Habitat
FEDERALLY-LISTED				
Endangered:	June Sucker (introduced)	Fish	Water - Lentic	Water - Lotic
	Gray Wolf (extirpated)	Mammal	Mountain Shrub	Mixed Conifer
Threatened:	Bald Eagle	Bird	Lowland Riparian	Agriculture
Candidate:	Yellow-billed Cuckoo	Bird	Lowland Riparian	Agriculture
	Ogden Rocky Mountainsnail	Mollusk	Mountain Shrub	Rock
Proposed:	(None)			
STATE SENSITIVE				
Conservation Agreement Species:	Columbia Spotted Frog	Amphibian	Wetland	Wet Meadow
	Northern Goshawk	Bird	Mixed Conifer	Aspen
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Bluehead Sucker	Fish	Water - Lotic	Mountain Riparian
Species of Concern:	American White Pelican	Bird	Water - Lentic	Wetland
	Bobolink	Bird	Wet Meadow	Agriculture
	Burrowing Owl	Bird	High Desert Scrub	Grassland
	Deseret Mountainsnail	Mollusk	Mountain Shrub	Rock
	Ferruginous Hawk	Bird	Pinyon-Juniper	Shrubsteppe
	Grasshopper Sparrow	Bird	Grassland	
	Greater Sage-grouse	Bird	Shrubsteppe	
	Kit Fox	Mammal	High Desert Scrub	
	Lewis's Woodpecker	Bird	Ponderosa Pine	Lowland Riparian
	Long-billed Curlew	Bird	Grassland	Agriculture
	Lyrate Mountainsnail	Mollusk	Mountain Shrub	Rock
	Sharp-tailed Grouse	Bird	Shrubsteppe	Grassland
	Short-eared Owl	Bird	Wetland	Grassland
	Townsend's Big-eared Bat	Mammal	Pinyon-Juniper	Mountain Shrub

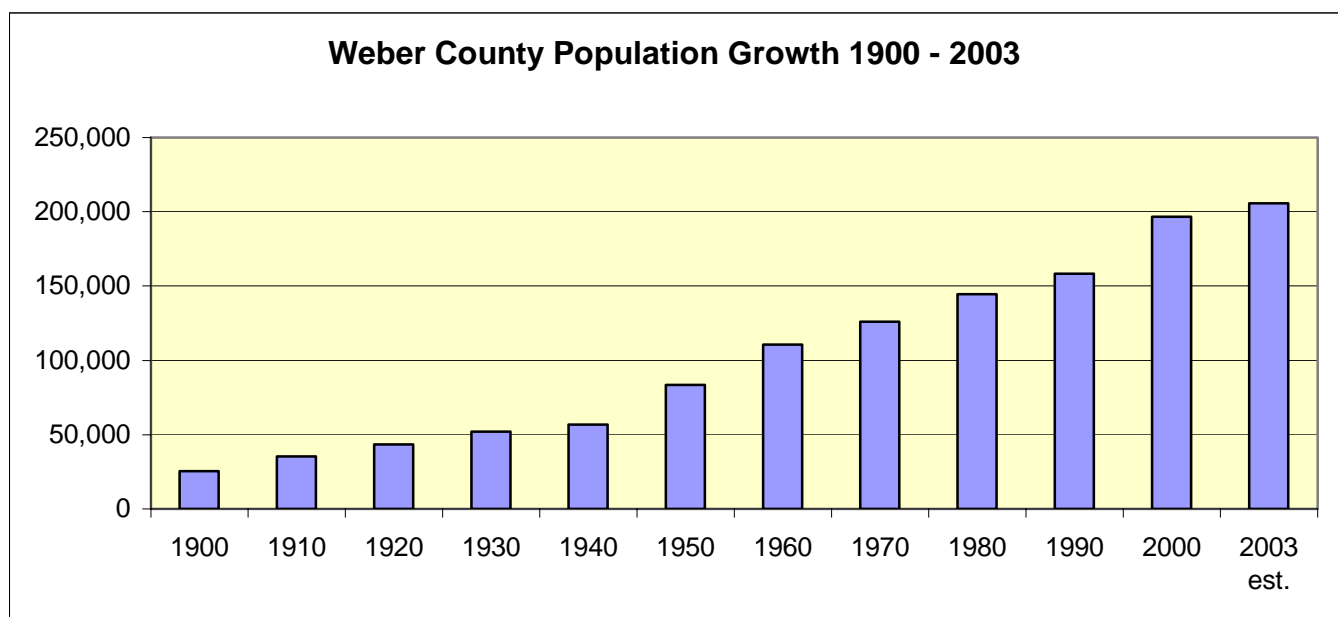
*Definitions of habitat categories can be found in the Utah Comprehensive Wildlife Conservation Strategy.

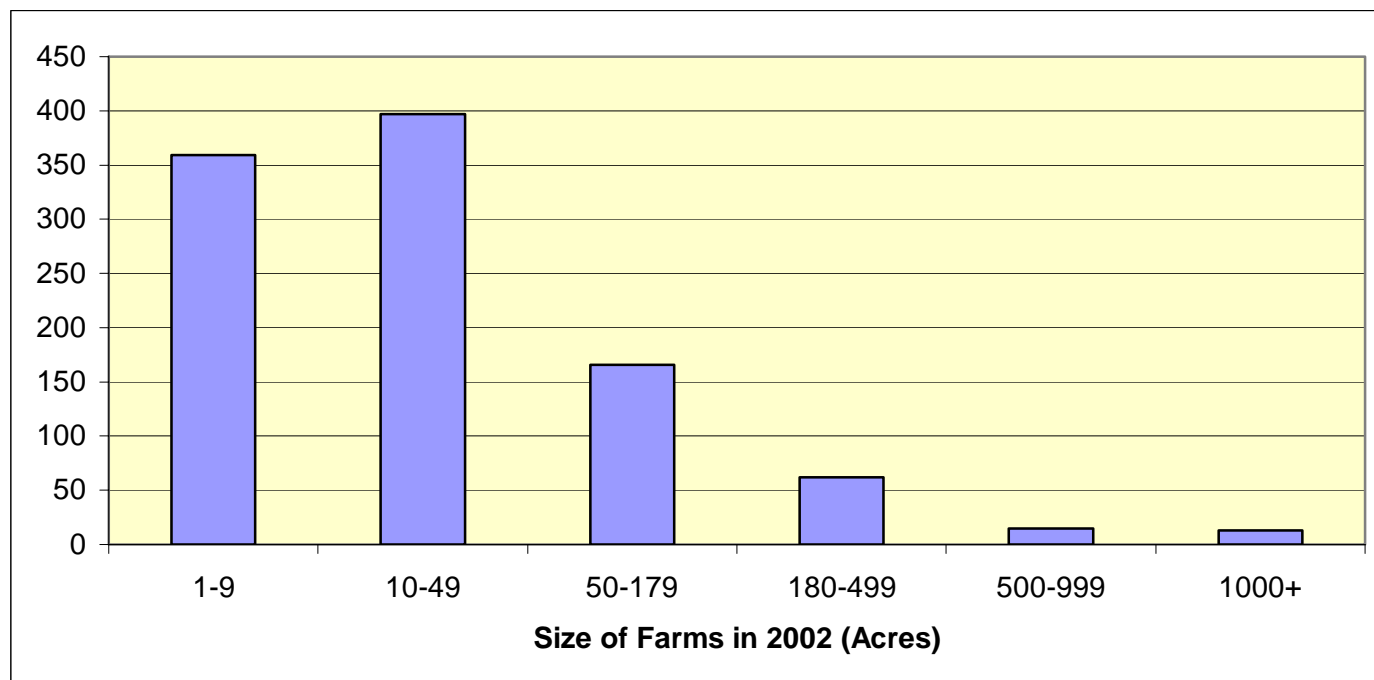
The Utah CWCS also prioritizes habitat categories based on several criteria important to the species of greatest conservation need. The top ten key habitats state-wide are (in order of priority):

1. **Lowland Riparian** (riparian areas <5,500 ft elevation; principal vegetation: Fremont cottonwood and willow)
2. **Wetland** (marsh <5,500 ft elevation; principal vegetation: cattail, bulrush, and sedge)
3. **Mountain Riparian** (riparian areas >5,500 ft elevation; principal vegetation: narrowleaf cottonwood, willow, alder, birch and dogwood)
4. **Shrubsteppe** (shrubland at 2,500 - 11,500 ft elevation; principal vegetation: sagebrush and perennial grasses)
5. **Mountain Shrub** (deciduous shrubland at 3,300 - 9,800 ft elevation; principal vegetation: mountain mahogany, cliff rose, bitterbrush, serviceberry, etc.)
6. **Water - Lotic** (open water; streams and rivers)
7. **Wet Meadow** (water saturated meadows at 3,300 - 9,800 ft elevation; principal vegetation: sedges, rushes, grasses and forbs)
8. **Grassland** (perennial and annual grasslands or herbaceous dry meadows at 2,200 - 9,000 ft elevation)
9. **Water - Lentic** (open water; lakes and reservoirs)
10. **Aspen** (deciduous aspen forest at 5,600 - 10,500 ft elevation)

Resource Concerns – SOCIAL AND ECONOMIC

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Social and Economic	Non-Traditional Landowners and Tenants	x	x	x	x	x		x	x		x	x	x	x	x	x
	Urban Encroachment on Agricultural Land	x	x	x	x	x		x	x				x			x
	Marketing of Resource Products															
	Innovation Needs															
	Non-Traditional Land Uses															
	Population Demographics, Changes and Trends															
	Special Considerations for Land Mangement (High State and Federal Percentage)				x											
	Active Resource Groups (CRMs, etc)				x											
	Full Time vs Part Time Agricultural Communities	x	x	x	x	x		x	x							
	Size of Operating Units	x	x	x	x	x										
	Land Removed from Production through Easements															
	Land Removed from Production through USDA Programs															
Other																

Census and Social Data



Number of Farms in Weber County: 1,012

Public Survey/Questionnaire Results:

The Weber Soil Conservation District sponsored a questionnaire in 2005 in order to gather input on the public's level of concern about natural resources. People were asked to provide input by taking an online survey, returning a paper copy of the survey, voicing their opinion at an SCD meeting, or talking directly to an SCD Board member. A news release was sent to the newspaper inviting people to take the online survey. Community and organization leaders were invited to take the survey by e-mail where possible and by regular mail when no e-mail was available. In addition, over 150 surveys were mailed to Weber County residents, mostly to people that voted in the last SCD election.

Thirty-one people responded by taking the online survey or returning the questionnaire. A third of the respondents indicated that they farm or ranch, on a part-time or full-time basis. Another third represent local, state, or federal government. Twenty percent were water users and 16% were urban or suburban citizens. Respondents were free to indicate that they represented more than one group. Forty-one percent thought of themselves as agricultural producers. Most of the respondents were male Caucasians over 50 years old.

Questionnaire respondents were asked to rate the urgency of addressing 41 natural resource concerns. They chose weeds, agricultural sustainability, loss of agricultural land, water conservation & supply, and water quality as the five most pressing natural resource concerns in Weber County. Over 60% of the respondents listed these as concerns that should be addressed immediately. In addition, over or nearly half thought that land conversion to development, groundwater, invasive species, irrigation water management, and riparian corridor concerns should also be addressed immediately. See the table below for a complete listing of the results for all the natural resources concerns. Off-Road Vehicles, mosquito abatement, and access to public lands were additional issues that people were concerned enough about to add to the list.

At least 22 people were concerned enough to clarify why their concerns are critical and which geographical areas of the County need the most attention. The predominant theme of the comments about resource concerns seemed to be development and loss of farmland. Seven people listed west Weber County, six listed

mountain areas, four listed farmland and rural areas, three listed Ogden Valley, and three listed areas with water as the crucial areas needing attention.

Respondents were also asked to rank the importance of different roles of the Soil Conservation District. Providing technical assistance to landowners was perceived as the most important of the five roles given. Scores for the different roles were:

- 96 Technical Assistance. to Landowners
Intermediary between Landowners and Regulatory
- 88 Agencies
- 85 Financial Assistance to Landowners
- 75 Natural Resources Education
- 64 Data Collection

It was also thought that the SCD should have roles in flood control, county planning, and promoting agriculture, conservation, and wise and proper use of resources.

Weber County Percentage	A concern that should be addressed immediately	A concern that should be addressed in the future	A minor concern or not a concern	No Opinion
Weeds	71%	16%	6%	6%
Agricultural Sustainability	65%	19%	0%	16%
Loss of Agricultural Land	65%	26%	3%	6%
Water Conservation and Supply	65%	23%	6%	6%
Water Quality	61%	26%	6%	6%
Land Conversion to Development	55%	19%	10%	16%
Groundwater	52%	29%	16%	3%
Invasive Species	52%	19%	13%	16%
Irrigation Water Management	48%	23%	16%	13%
Riparian Corridors (waterways)	48%	26%	13%	13%
Air Quality	42%	32%	19%	6%
Urban Land Use	42%	29%	19%	10%
Energy Conservation and Supply	42%	29%	13%	16%
Urban Water Pollution	42%	26%	23%	10%
Forest Health	39%	29%	23%	10%
Open Space	35%	39%	16%	10%
Fish and Wildlife Habitat	32%	42%	19%	6%
Food and Fiber Production	32%	35%	10%	23%
Wetlands	32%	19%	39%	10%
Wildfire	32%	29%	23%	16%
Flooding	29%	32%	32%	6%
Rural Land Use	29%	42%	16%	13%
Small-Acreage Management	29%	29%	19%	23%
Rangeland Health	26%	45%	16%	13%
Grazing Lands	26%	39%	19%	16%
Surface Water	26%	55%	16%	3%
Fish and Wildlife Populations	26%	35%	29%	10%
Recreation	19%	29%	32%	19%
Landslides	16%	26%	32%	26%
Landfills and Waste Disposal	16%	48%	23%	13%
Public Land Management	16%	42%	26%	16%
Soil Erosion	16%	42%	32%	10%
Soil Quality/Soil Health	16%	45%	19%	19%
Threatened/Endangered or State-Sensitive Species	16%	26%	32%	26%
Biological Diversity	13%	42%	32%	13%
Pesticide Management	13%	45%	29%	13%
Timber Production	13%	26%	32%	29%
Manure Management	10%	32%	35%	23%
Mined Land Reclamation	10%	10%	48%	32%
Cultural Resources	6%	35%	39%	19%
Nutrient/Fertilizer Management	6%	45%	29%	19%

**The complete survey will be posted on <http://www.uacd.org/>*

Footnotes / Bibliography

1. General information about Weber County obtained from: <http://www.ogdencity.com/> and through the Weber/Davis Soil Survey of 1968.
2. Location and land ownership maps made using GIS shapefiles from the Automated Geographical Reference Center (AGRC), a Utah State Division of Information Technology. Website: <http://agrc.utah.gov/>
3. Land Use/Land Cover layer developed by the Utah Department of Water Resources. A polygon coverage containing water-related land-use for all 2003 agricultural areas of the state of Utah. Compiled from initial USGS 7.5 minute Digital Raster Graphic waterbodies, individual farming fields and associated areas are digitized from Digital Orthophotos, then surveyed for their land use, crop type, irrigation method, and associated attributes.
4. Prime and Unique farmlands derived from SURGO Soils Survey UT607 and Soil Data Viewer. Definitions of Prime and Unique farmlands from U.S. Geological Survey, http://water.usgs.gov/eap/env_guide/farmland.html#HDR5
5. Land Capability Classes derived from SURGO Soils Survey UT607 and Soil Data Viewer.
6. Tons of Soil Loss by Water Erosion data gathered from National Resource Inventory (NRI) data. Estimates from the 1997 NRI Database (revised December 2000) replace all previous reports and estimates. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is due to changes in statistical estimation protocols, and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>
7. Irrigated Adjudicated Water Rights obtained from the Utah Division of Water Rights.
8. Stream Flow data from: USGS-UTAH
9. Stream length data calculated using ArcMap and 100k stream data from AGRC and 303d waters from the Utah Department of Environmental Quality.
10. The 2003 noxious weed list was obtained from the State of Utah Department of Food and Agriculture. For more information contact Steve Burningham, 801-538-7181 or visit their website at http://ag.utah.gov/plantind/noxious_weeds.html
11. Wildlife information derived from the Utah Division of Wildlife Resources' Comprehensive Wildlife Conservation Strategy (CWCS) (<http://wildlife.utah.gov/cwcs/>) and from the Utah Conservation Data Center (<http://dwrcdc.nr.utah.gov/ucdc/>).
12. County population data from the U.S. Census Bureau, Utah Quick Facts, <http://quickfacts.census.gov/qfd/states/49000.html>
15. Farm information obtained from the National Agricultural Statistics Service, 2002 Census of Agriculture. <http://www.nass.usda.gov/census/census02/volume1/index2.htm>
16. Utah Animal Feeding Operation (AFO) information was obtained from "Utah! Animal Feeding Operation Strategy: five Years of Progress 1999-2004".